

# SCH20120DN4

## 20A, 1200V SiC Schottky Barrier Diode

### Features

- Low Forward Voltage Drop:  $V_F=1.55V$  (typical @  $I_F=10A$ )
- Reverse Voltage:  $V_{RRM}=1200V$
- Avalanche Energy Rated
- High Surge Capability
- Low Power Loss and High Efficiency
- Silicon Carbide Substrate

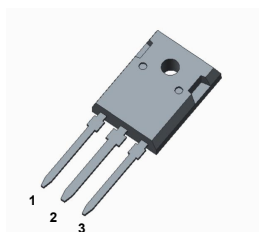
### Applications

- Switching Power Supply
- Solar Inverter
- Power Factor Correction
- Uninterruptible Power Supply

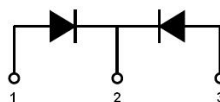
### Description

The SCH20120DN4 is a SiC schottky barrier diode. It is base on silicon carbide material, and its switching behavior is independent with temperature. The device has superfast recovery property and lower forward voltage drop, it can be used in switching power supply, solar inverter, PFC and UPS.

### Package Type & internal Circuit



TO-247



1. Anode 2. Cathode 3. Anode

### Absolute Maximum Ratings

per diode at  $T_C=25^\circ C$  unless otherwise noted

| Symbol      | Parameter                            |                                | Ratings  | Unit       |
|-------------|--------------------------------------|--------------------------------|----------|------------|
| $V_{RRM}$   | Peak Repetitive Reverse Voltage      |                                | 1200     | V          |
| $V_{RWM}$   | Working Peak Reverse Voltage         |                                | 1200     | V          |
| $V_R$       | DC Blocking Voltage                  |                                | 1200     | V          |
| $I_{F(AV)}$ | Average Rectified Forward Current    | per diode at $T_C=125^\circ C$ | 10       | A          |
| $I_{FSM}$   | Non-repetitive Peak Surge Current    | $t_p=10ms$ , half sine wave    | 60       | A          |
|             |                                      | $t_p=200us$ , square wave      | 240      | A          |
| $P_D$       | Power Dissipation                    |                                | 160      | W          |
| $T_J$       | Operating Junction Temperature Range |                                | -55~+175 | $^\circ C$ |
| $T_{STG}$   | Storage Temperature Range            |                                | -55~+175 | $^\circ C$ |

### Thermal Characteristics

| Symbol        | Parameter                            | Ratings | Unit         |
|---------------|--------------------------------------|---------|--------------|
| $R_{th(J-C)}$ | Thermal Resistance, Junction to case | 0.93    | $^\circ C/W$ |

## Electrical Characteristics per diode at $T_C=25^\circ\text{C}$ unless otherwise noted

| Symbol | Parameter               | Conditions                                                        | Min. | Typ. | Max. | Unit          |
|--------|-------------------------|-------------------------------------------------------------------|------|------|------|---------------|
| $V_F$  | Forward Voltage Drop    | $I_F=10\text{A}$                                                  | -    | 1.55 | 1.80 | V             |
|        |                         | $I_F=10\text{A}, T_C=125^\circ\text{C}$                           | -    | -    | 2.55 | V             |
| $I_R$  | Reverse Leakage Current | $V_R=1200\text{V}$                                                | -    | -    | 200  | $\mu\text{A}$ |
| C      | Total Capacitance       | $V_R=0\text{V}, f=1\text{MHz}$                                    | -    | 650  | -    | pF            |
|        |                         | $V_R=400\text{V}, f=1\text{MHz}$                                  | -    | 49   | -    |               |
|        |                         | $V_R=800\text{V}, f=1\text{MHz}$                                  | -    | 40   | -    |               |
| $Q_C$  | Total Capacitive Charge | $V_R=800\text{V}, I_F=10\text{A}, di/dt=-200\text{A}/\mu\text{s}$ | -    | 33   | -    | nC            |

## Typical Performance Characteristics

Fig. 1. Typical Characteristics:  $V_F$  vs.  $I_F$

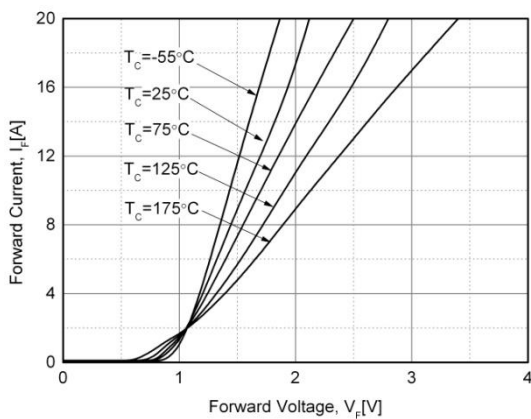


Fig. 2. Typical Characteristics:  $V_R$  vs.  $I_R$

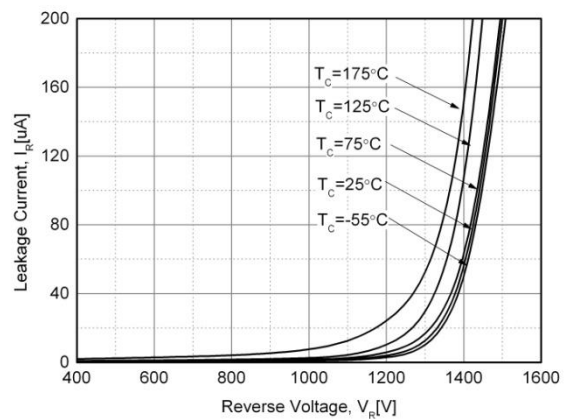


Fig. 3. Typical Characteristics:  $V_R$  vs.  $Q_C$

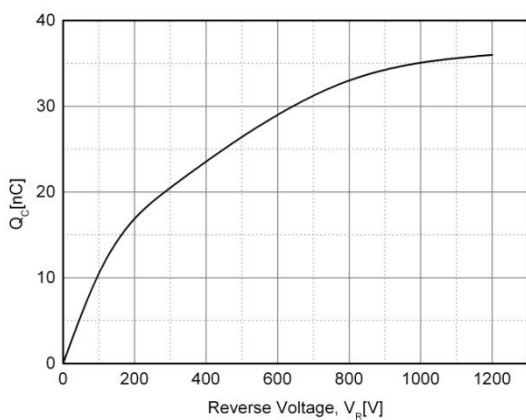
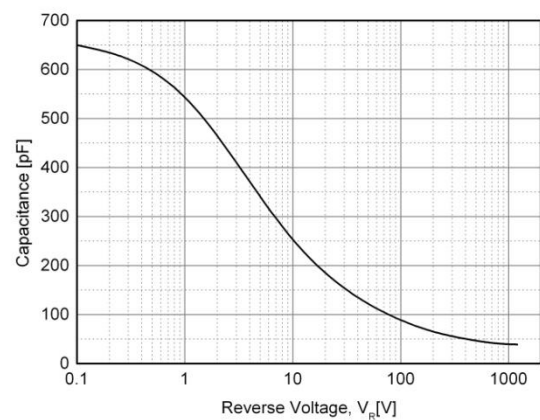


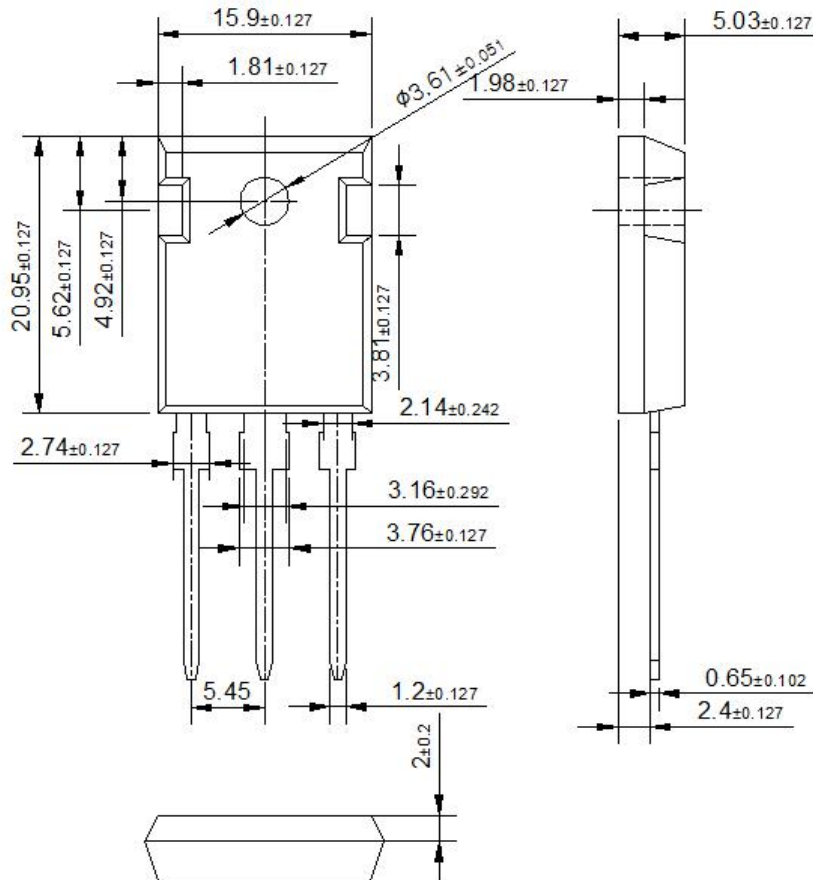
Fig. 4. Typical Characteristics:  $V_R$  vs. Capacitance



## Package Dimensions

### TO-247

(Dimensions in Millimeters)



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